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ABSTRACT

Developed in response to a ruling by the Louisiana State Board of Elementary and Secondary Education that freshmen entering high school in 1985-86 must have one-half credit in computer literacy as a graduation requirement, this curriculum guide outlines a basal course in computer literacy for ninth grade students. The course may also be offered to students at a higher grade level. A brief introduction presents 10 assumptions about the teachers, students, and materials involved in the computer literacy course. Presentation of the course content includes the course outline, course objectives, and activities covering the following topics: (1) the computer's impact on society today; (2) the development of computers; (3) microcomputer hardware, software, and applications; (4) elementary programing; (5) hardware and software selection; and (6) the computer's impact on society tomorrow. Each activity section contains at least two course objectives together with their relationship to the corresponding course content and student activities. A vocabulary list is also provided for each of the sections, as well as suggestions for individual projects for further student exploration and sample test items. A bibliography, which includes periodicals as well as monography, a set of evaluative techniques for the curriculum, and a list of suggested instructional software complete the document. (JB)

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STATE OF LOUISIANA
DEPARTMENT OF EDUCATION

COMPUTER LITERACY CURRICULUM GUIDE

BULLETIN 1739
1985

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Thomas G. Clausen, Ph.D.
Superintendent

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STATE OF LOUISIANA

DEPARTMENT OF EDUCATION

COMPUTER LITERACY CURRICULUM GUIDE

Bulletin 1739

1985

Issued by
Office of Academic Programs

THOMAS G. CLAUSEN, Ph.D.

SUPERINTENDENT

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FOREWORD

This Computer Literacy Curriculum Guide has been developed in response to the ruling by the Louisiana State Board of Elementary and Secondary Education that the freshmen entering high school in 1985-86 must have one-half credit in Computer Literacy as a graduation requirement. This guide was developed by a selected statewide committee of educators knowledgeable in the area of technology in education. The Louisiana Department of Education, in its role of leadership and technical assistance, presents this guide as an aid to our educators in their effort to prepare Louisiana students for their places in America's present and future society.

Thomas G. Clausen

Thomas G. Clausen, Ph.D.

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PACING CHART

ection	Title	Weeks
I.	The Computer's Impact on Society Today	1
II.	Development of Computers	1
III.	Microcomputer Hardware, Software, and Applications (hands-on use of word processing, electronic spreadsheet, and database)	8
IV.	Elementary Programming	5
V.	Hardware and Software Selection	1
VI.	The Computer's Impact on Society Tomorrow	2

PREFACE

The Louisiana Board of Elementary and Secondary Education has ruled that, beginning with the ninth grade class of 1985-86, every public school graduate in Louisiana must have one-half unit of credit in Computer Literacy, Computer Science, or Data Processing. This curriculum guide was developed for the required course by a committee of teachers from across the State.

DEFINITION OF COMPUTER LITERACY

The committee has adopted the definition of computer literacy developed by the State Task Force on Computer Literacy. "The Task Force has defined computer literacy as the knowledge of the capabilities, limitations, applications, and implications of computer technology. In general, a computer-literate person is one who understands what a computer is, who can use it to solve some problems, who can converse in computer-related terms, and who understands the impact of the computer on jobs and society."

ASSUMPTIONS

The committee began its work by agreeing on the following assumptions about the Computer Literacy course:

1. Each teacher will have at least one computer available for demonstration. No specific type of computer is assumed.

2. Students have had no formal computer instruction. Many students will have extensive knowledge, but the course was developed with the idea that the student will have had little previous exposure to the subject.

3. Students have had no formal instruction in the use of a keyboard. Typing is not a prerequisite for this computer literacy course; however, some knowledge of keyboarding is desirable.

4. Teachers' backgrounds will vary. Now that this course has been developed, teacher training can be focused on preparation to teach the topics contained herein. A separate committee is preparing guidelines for the certification of teachers to teach computer literacy and computer science.

5. For some students, the Computer Literacy course will be the only computer-related course taken in high school. Others will later take a data processing, word processing, or computer science course before graduation. Consideration of the student who will not take another computer course was the major determinative of the committee in developing this curriculum guide.

6. Each student will have a textbook. However, the curriculum guide is not oriented toward any one textbook.

7. No particular software product is required. However, certain kinds of software (e.g., at least one operating system, the BASIC programming language, LOGO, a word processing program, a data base management program, a spreadsheet program, computer-assisted instruction programs, and so forth) should be available as funds permit.

8. The course content is designed for ninth grade students; however, the course may be offered to students at a higher grade level.

9. The committee makes no assumption about the other one-semester course to be paired with computer literacy.

10. No State proficiency examination is currently available for high school students who are already computer literate and wish to receive credit by examination. (The Computer Literacy Curriculum Guide committee recommends that such an examination be developed.)

BASAL COURSE

This curriculum guide outlines a basal course in Computer Literacy. The sequence of topics in the Course Outline is optional. In selecting the course content the committee considered the following factors:

a. Lack of hardware and software in certain schools limits the amount of hands-on work students can do.

b. Teachers teaching the course have no standardized backgrounds. Some flexibility must be allowed for the individual instructor to expand certain strands of the course in accordance with that teacher's background and interest.

ACTIVITIES

All the activities listed are optional. It is assumed the teacher will choose activities according to the equipment available, the teacher's background, students' abilities, backgrounds, and interests, and the time available. For these reasons, a wide variety of activities is included, many of which do not require a computer.

INDIVIDUAL STUDENT PROJECTS

This curriculum guide includes a list of projects that could be assigned to individual students, either at the end of the course or at convenient times during the course. Again, it is assumed that the use of these projects will depend upon the time available and the abilities and backgrounds of the students.

VOCABULARY

A suggested vocabulary list is included. The Committee does not intend that all words in the list be learned by students. No glossary is included in this document because glossaries are available in textbooks and computer dictionaries.

PILOTING

After being developed by the Computer Literacy Writing Committee in September, 1984, this course was piloted during the second semester of the academic year 1984-85. Comments from the piloting teachers were used to revise the curriculum guide before final publication.

COUPSE OUTLINE

LOUISIANA COMPUTER LITERACY

I. The Computer's Impact on Society Today

A. Capabilities of computers

1. Kinds of jobs computers do well
2. Kinds of jobs computers do not do well

B. Uses of computers

1. In the home
2. In education
3. In business and industry
4. In government

II. Development of Computers

A. Pre-computer Era

1. Abacus
2. Slide rule
3. Adding machine
4. Mechanical calculator
5. Analytical engine
6. Punched card machine

B. Computer Age

1. Computer generations

a. First
b. Second
c. Third
d. Fourth
e. Fifth

2. Classification by size of computer

a. Mainframe
b. Minicomputer
c. Microcomputer
d. Others

III. Microcomputer Hardware, Software, and Applications

A. Hardware

1. Central Processing Unit (CPU)

a. Arithmetic-logic unit
b. Control unit
c. Internal memory (measured in K's)

(1) RAM
(2) ROM

2. Peripherals

a. Input devices

(1) Keyboard
(2) Card reader
(3) Light pen
(4) Magnetic strip reader (e.g., credit cards)
(5) Paper tape reader
(6) Voice recognition device
(7) Optical scanner and mark sense reader
(8) Joystick
(9) Mouse
(10) Touch screen
(11) Bar code reader
(12) Graphics tablet
(13) Magnetic ink character reader
(14) Other

b. Output devices

(1) Monitor
(2) Printer
(3) Plotter
(4) Card punch
(5) Voice synthesizer
(6) Other

c. Input/output devices

(1) Disk drive
(2) Magnetic tape drive

d. Other peripherals

(1) Interface cards
(2) Modem

e. External storage devices

(1) Disk drive

(a) Hard
(b) Floppy

(2) Magnetic tape drive

(a) Cassette
(b) Reel-to-reel

B. Software Awareness

1. Games

a. Educational
b. Recreational

2. Educational applications

a. Computer-assisted instruction
b. Simulations
c. Administrative uses

3. Word processing
4. Data base management
5. Spreadsheets
6. Business applications

a. Payroll
b. Accounting
c. Inventory
d. Management

7. Personal use
8. Telecommunications
9. Graphics
10. Other

C. Operating Systems

1. Booting the computer
2. Initializing (formatting) a disk
3. Obtaining a directory (catalog) of a disk
4. Copying a disk or file
5. Deleting a file
6. Executing a program

IV. Elementary Programming

A. Language awareness

1. Lower level languages

a. Machine language
b. Assembly language

2. Higher level languages

a. FORTRAN
b. COBOL
c. BASIC
d. Pascal
e. LOGO
f. Other

B. Introduction to the keyboard (if necessary)

1. Alphabetic keys
2. Numeric keys
3. Special function keys
4. Other

C. BASIC programming

1. Direct commands

a. PRINT
b. RUN
c. LIST
d. Clear the screen
e. Erase memory
f. Load a program
g. Save a program

2. Program statements

a. Line numbers
b. Variables

(1) Numeric
(2) String

c. Keywords

(1) PRINT
(2) LET
(3) INPUT
(4) GOTO
(5) END
(6) REM
(7) IF-THEN
(8) FOR-NEXT
(9) Other

3. Editing

a. Deleting a line
b. Adding a line
c. Modifying a line

4. Arithmetical operations

a. Symbols
b. Order of operations

5. Debugging

a. Syntax errors
b. Logic errors

6. Graphics (optional)

V. Hardware and Software Selection

A. Needs assessment

1. Personal use
2. Business use

B. Software requirements

C. Hardware requirements

1. Amount of memory
2. Peripherals

D. Cost

E. Maintenance requirements

VI. The Computer's Impact on Society Tomorrow

A. Implications for future lifestyles

1. Home
2. Work
3. Recreation
4. Education
5. Health

B. Technological trends

1. Robotics
2. Computer-aided design and manufacturing
3. Communications
4. Artificial intelligence
5. Biotechnology
6. Other

C. Careers and employment

1. Careers directly involving computers
2. Careers indirectly involving computers

D. Ethics and security

1. Software piracy
2. Threat to personal privacy
3. Computer vs. human errors
4. Regulating access to government and business files

OBJECTIVES OF COMPUTER LITERACY

I-A

1. To demonstrate an understanding of computer capabilities, the student will:

   a. list three types of jobs that computers do well and give an example of each type
   b. list three types of jobs that computers do not do well and give an example of each type

I-B

2. To demonstrate an awareness of computers' impact on home life, the student will:

   a. list three devices in homes that contain computers (microprocessor)
   b. list three uses of a microcomputer in the home

3. To demonstrate an awareness of computers' impact on education, the student will:

   a. state the two major ways computers are used in schools (administration and instruction)
   b. name and briefly explain two forms of computer-assisted instruction (CAI) (e.g., drill-and-practice, tutorial, simulations)

4. To demonstrate an awareness of computers' impact on business and industry, the student will:

   a. list five kinds of businesses and industries that use computers and briefly explain how each uses them (e.g., banks, utility companies, retail stores, airlines, hotels, travel agencies, and so forth)
   b. state three examples of ways that the use of computers in business has affected his/her family within the last month

5. To demonstrate an awareness of computers' impact on government, the student will:

   a. list three governmental agencies that use computers and briefly explain how each agency uses them (e.g., Internal Revenue Service, Social Security Administration, Selective Service, NASA, Defense Department, and so forth)
   b. give three examples of ways that use of computers by the federal, state or local government has affected his/her family

6. To demonstrate an awareness of the dependence of business and government on computers, the student will list five jobs that would not be possible today without computers (e.g., banks could not process the millions of checks written each day; NASA could not have put men on the moon; the IRS could not keep track of the tax records of all citizens; and so forth).

II-A

1. To demonstrate knowledge of the pre-computer era, the student will:

   a. identify at least three early calculating devices
   b. associate names with contributions of at least three major figures in the development of mechanical computation

II-B

2. To demonstrate knowledge of the development of the computer, the student will:

   a. state at least three reasons for the advancement of technology in the computer field (e.g., census, war, information explosion)
   b. list the major characteristics of each of the five generations of computers
   c. classify computers by size (mainframe, minicomputer, microcomputer)

III-A

1. To demonstrate familiarity with computer hardware, the student will:

   a. name the parts of the CPU
   b. state the function of each part of the CPU
   c. state two differences between RAM and ROM
   d. list five input and three output devices
   e. explain the use of three input and three output devices
   f. specify the advantages and disadvantages of a hard disk, floppy disk, and magnetic tape storage

III-B

2. To demonstrate an understanding of applications of computer software, the student will identify three kinds of software and give an example of each.

III-C

3. To demonstrate an ability to use a computer operating system, the student will state the steps to perform the following:

   a. boot the computer system
   b. initialize (format) a disk
   c. obtain a directory (catalog)
   d. copy a file or an entire diskette
   e. delete a file
   f. execute a program

IV-A

1. To demonstrate an understanding of the different kinds of programming languages, the student will:

   a. explain the difference between lower level programming languages and higher level programming languages
   b. distinguish among the different programming languages according to their uses

IV-B

2. To demonstrate facility with a computer keyboard, the student will use the alphabetic, numeric, and special function keys.

IV-C

3. To demonstrate understanding of BASIC programming, the student will:

   a. use PRINT as a direct command
   b. enter, execute, run, list, and erase a given program from the computer
   c. save a program on tape or disk and load a program from tape or disk into the memory of the computer
   d. explain the elements of a BASIC program line: line number, keyword, variable, expression, or literal
   e. write simple programs using all of the following key words: REM, INPUT, LET, PRINT, GOTO, and END

f. identify and define the following relational symbols: =, <, <=, >, >=, and <>
g. write programs using looping with FOR-NEXT statements
i. evaluate a LET statement using all the BASIC operators +, -, *, /, exponentiation, and the hierarchy of operations procedure
j. modify a program by deleting a line, adding a line, or changing a line
k. analyze a given problem

(1) write the steps to solution
(2) convert to BASIC program statements
(3) document the program
(4) execute the program
(5) debug the program by correcting errors in logic and syntax

l. analyze a given program and determine the value of each variable to be printed

V-A

1. To demonstrate an ability to assess the need for a computer, students will list three tasks that they would want a computer to do:

a. for them personally
b. for a business

V-B

2. To demonstrate an understanding of software requirements, the student will select a software package to perform a particular task.

V-C

3. To demonstrate an understanding of hardware requirements, the student will select a hardware configuration to run a particular software package.

V-D

4. To demonstrate an understanding of the cost of computer software and hardware, the student will calculate the total cost of the software and hardware selected for objectives 2 and 3.

V-E

5. To demonstrate an awareness of maintenance requirements, the student will list three maintenance measures for a computer system.

VI-A

1. To demonstrate an awareness of the implications of computers for future lifestyles, the student will list and discuss four ways that computers will affect their future lifestyles.

VI-B

2. To demonstrate an awareness of technological trends, the student will present two examples of technological trends in industry involving computers.

VI-C

3. To demonstrate an awareness of careers and employment opportunities in the computer field, the student will list:

   a. at least three occupations that involve hands-on applications using the computer
   b. two occupations that involve the gathering of information to be put into a computer and two occupations that come about after information has been entered

VI-D

4. To demonstrate an awareness of ethical and legal problems caused by computers, the student will:

   a. explain the difference between public domain software and copyrighted software
   b. list three ways that computers threaten individual privacy
   c. explain two ways that human errors cause computer errors
   d. list two ways that computer files can be physically secured
   e. list two problems or concerns involved in regulating access to data banks

ACTIVITIES

OBJECTIVE I-A

1. To demonstrate an understanding of computer capabilities, the student will:

   a. list three kinds of jobs that computers do well and give an example of each type
   b. list three kinds of jobs that computers do not do well and give an example of each

GENERALIZATION

Computers do only what they are programmed to do; they do certain jobs well, but cannot do other jobs.

COURSE CONTENT OUTLINE

I. The Computer's Impact on Society Today

   A. Capabilities of computers

      1. Types of jobs computers do well
      2. Types of jobs computers do not do well

ACTIVITIES

1. Given a list of jobs, select those that a computer can do well.

2. Add a list of numbers, documenting the time it takes to do the task. Then check the sum for accuracy. Repeat the activity using a calculator or a microcomputer. Compare the time and accuracy of the two activities.

3. Give examples of computer use in numerous organizations to keep track of information (banks, stores, government agencies, and the like).

4. Contact an airline or travel agency to check available flights for a particular date, time, and destination. Explain how a computer was used to provide this information.

(continued on next page)

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5. Explain, using examples, how computers are used to control machines without the help of people (e.g., set type for books and newspapers, control the movement and speed of trains, control lights and air-conditioning in buildings).

6. Go on a field trip to an installation where a computer controls machinery (a newspaper plant, a petroleum refinery, a telephone offices, and the like).

7. Collect newspaper clippings describing various uses of computers. Divide the class into groups and have each group report on the articles.

8. Debate topics such as "Is a Home Computer Worth the Cost Involved?"

OBJECTIVE I-B

2. To demonstrate an awareness of the computer's impact on home life, the student will:

   a. list three devices in homes that contain computers (microprocessors)
   b. list three uses of a microcomputer in the home

3. To demonstrate an awareness of computers' impact on education, the student will:

   a. state the two major ways computers are used in schools (administration and instruction)
   b. name and briefly explain two forms of computer-assisted instruction (CAI) (e.g., drill-and-practice, tutorial, simulations)

4. To demonstrate an awareness of computers' impact on business and industry, the student will:

   a. list five kinds of businesses and industries that use computers and briefly explain how each uses them (e.g., banks, utility companies, retail stores, airline, hotels, travel agencies, and the like)
   b. state three examples of ways that the use of computers in business has affected his/her family within the last month

5. To demonstrate an awareness of the computer's impact on government, the student will:

   a. list three governmental agencies that use computers and briefly explain how each agency uses them (e.g., Internal Revenue, Social Security Administration, Selective Service, NASA, Defense Department, and the like)
   b. give three examples of ways that federal, state, or local government use of computers has affected his/her family

6. To demonstrate an awareness of the dependence of business and government on computers, the student will list five jobs that would not be possible today without computers (e.g., banks could not process the millions of checks written each day; NASA could not have put men on the moon; the IRS could not keep track of the tax records of all citizens; and so forth).

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OBJECTIVE I-B CONTINUED

GENERALIZATION

Computers are being used in more and more fields and now affect the life of every citizen.

COURSE CONTENT OUTLINE

B. Uses of computers
   1. In the home
   2. In education
   3. In business and industry
   4. In government

ACTIVITIES

1. List devices in your own home that contain microprocessors.

2. Cut out from a catalog pictures of household items that contain microprocessors. Make a bulletin board display from these pictures.

3. Interview a local computer vendor to obtain information about uses for computers in homes and businesses.

4. Collect computer advertisements found in magazines and newspapers. Criticize any that claim that computers can do jobs that they actually cannot do well.

5. View a demonstration by the teacher of a computer-assisted instruction program (drill-and-practice, tutorial, simulation).

6. List ways that computers are used in your school. Also list ways that computers could be used in schools in the future.

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7. Scan the yellow pages of the telephone book and list computer-related products and services advertised therein.

8. Make a bulletin board display showing five businesses that use computers. The display should include computerized items used by these businesses (e.g., bank checks, receipts, utility bills, airline tickets, hotel reservations, etc.).

9. Discuss the statement, "Local, state, and federal governments could not function without computers."

10. State at least one way each of the following government agencies use computers: Internal Revenue Service, Department of Public Safety (Motor Vehicles), Legislature, Department of Defense, NASA, U.S. Postal Services, and the law enforcement agencies.

11. View and discuss the I.T.V. program, "Adventure of the Mind," which demonstrates how computers are used in business and government.

Section I

VOCABULARY

computer

computer-assisted instruction (CAI)

data

drill-and-practice

information

microprocessor

program

simulation

tutorial

OBJECTIVE II-A

1. To demonstrate knowledge of the pre-computer era, the student will:

   a. identify at least three early calculating devices
   b. associate names with the contributions of at least three major figures in the development of mechanical computation

GENERALIZATION

Mankind has invented calculating devices as they were needed to solve problems.

COURSE CONTENT OUTLINE

II. Development of Computers

   A. Pre-computer Era

      1. Abacus
      2. Slide rule
      3. Adding machine
      4. Mechanical calculator
      5. Analytical engine
      6. Punched card machine

ACTIVITIES

1. In a class discussion, identify and describe uses of some of the early calculating machines that led to the development of the computer.

2. Demonstrate the abacus.

3. Demonstrate the slide rule.

4. Collect pictures of early calculating devices.

5. Create for the bulletin board a time line, entitled "Inventions of the Pre-Computer Era." Include pictures or drawings of the inventions, inventor's name, and any other pertinent information.

6. In a class discussion, using a chart, trace the history of calculating devices from the abacus to punched card machines.

(continued on next page)

7. Collect examples of punched cards in use today.

8. Speculate about what needs were met by the invention of calculating machines.

9. To demonstrate the advantage of the calculator, the teacher divides the class into groups. Each group is given a problem and a device for solving the problem (pencil/paper, fingers, piece of string, abacus, slide rule, adding machine, and a calculator). The teacher times each group to see how long it takes to successfully complete the problem.

OBJECTIVE II-B

2. To demonstrate knowledge of the development of the computer, the student will:

   a. state at least three reasons for the advancement of technology in the computer field (e.g., census, war, information explosion)
   b. list the major characteristics of each of the five generations of computers
   c. classify computers by size (mainframe, minicomputer, microcomputer)

GENERALIZATION

Computers have progressively become smaller, faster, cheaper, and easier to use.

COURSE CONTENT OUTLINE

B. Computer Age

   1. Computer generations

      a. First
      b. Second
      c. Third
      d. Fourth
      e. Fifth

   2. Computer classification by size

      a. Mainframe
      b. Minicomputer
      c. Microcomputer
      d. Others

ACTIVITIES

1. Collect pictures of vacuum tubes, transistors, integrated circuits, and silicon chips, showing their relative sizes.

2. Bring to class a vacuum tube, transistor, or integrated circuit. Mount them on a board for display.

3. View an audiovisual presentation on the evolution of computers.

4. Discuss the reasons for the rapid development of computers.

5. Make a chart summarizing the characteristics of each computer generation.

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ACTIVITIES CONTINUED

6. Compare and contrast the generations of computers in terms of memory capacity, physical size, speed, and cost.

7. On a time line, locate and describe the different generations of computers.

8. Make a computer system's chart for a notebook or scrapbook. Every time you see a computer or hear of a computer's installation, list the source under the appropriate heading.

Example: Mainframe	Minicomputer	Microcomputer
First National Bank	Mom's/Dad's office	Classroom

Section II

VOCABULARY

abacus

analog

analytical engine

calculator

data processing

digit

digital

integrated circuit

mainframe

manual processing

microcomputer

minicomputer

punch card

silicon chip

slide rule

technology

terminal

transistor

vacuum tube

OBJECTIVE III-A

1. To demonstrate familiarity with computer hardware, the student will:

   a. name the parts of the CPU
   b. state the function of each part of the CPU
   c. state two differences between RAM and ROM
   d. list five input and three output devices
   e. explain the use of three input and three output devices
   f. specify the advantages and disadvantages of hard disk, floppy disk, and magnetic tape storage

GENERALIZATION

Any computer must perform four functions: storage, input, processing, and output.

COURSE CONTENT OUTLINE

III. Microcomputer Hardware, Software, and Applications

   A. Hardware

      1. Central Processing Unit (CPU)

         a. Arithmetic-logic unit
         b. Control unit
         c. Internal memory (measured in K's)

            (1) RAM
            (2) ROM

ACTIVITIES

1. Label the parts of a central processing unit on a diagram provided by the teacher.

2. Collect and organize in a notebook or scrapbook newspaper and magazine articles, ads, and pictures of computer hardware.

3. Classify each item in a list of memory characteristics as pertaining to either RAM or ROM (e.g., "information lost when computer is turned off" applies to RAM).

4. Classify a list of devices as either input, output, or input/output devices.

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COURSE CONTENT OUTLINE CONTINUED

2. Peripherals

a. Input devices

(1) Keyboard
(2) Card reader
(3) Light pen
(4) Magnetic strip reader (e.g., credit card)
(5) Paper tape reader
(6) Voice recognition device
(7) Optical scanner and mark sense reader
(8) Joystick
(9) Mouse
(10) Touch screen
(11) Bar code reader
(12) Graphics tablet
(13) Magnetic ink character reader
(14) Other

b. Output devices

(1) Monitor
(2) Printer
(3) Plotter
(4) Card punch
(5) Voice synthesizer
(6) Other

c. Input/output devices

(1) Disk drive
(2) Magnetic tape drive

(continued on next page)

ACTIVITIES CONTINUED

5. Match a list of input devices with the operations listed (e.g., drawing a picture on the CRT screen requires a light pen or a graphics tablet).

6. Match a list of output devices with the operations listed (e.g., obtaining a hard copy of a report requires a printer).

7. Identify on a diagram the parts of floppy disk storage.

8. Compare and contrast a hard disk and a floppy disk, giving advantages and disadvantages of each.

9. Select either a floppy disk or a magnetic tape as the storage medium to be used in a given situation.

10. Discuss ways that a modem would enhance the use of a home computer.

11. Demonstrate the use of a graphics pad.

12. Demonstrate the use of a mouse to communicate with the computer.

d. Other Peripherals
    (1) Interface cards
    (2) Modem
e. External storage devices
    (1) Disk drive
        (a) Hard
        (b) Floppy
    (2) Magnetic tape drive
        (a) Cassette
        (b) Reel-to-reel

OBJECTIVE III-B

2. To demonstrate an understanding of applications of computer software, the student will identify three kinds of software and give an example of each.

GENERALIZATION

Computer hardware is useless without software.

COURSE CONTENT OUTLINE

B. Software Awareness

1. Games
   a. Educational
   b. Recreational
2. Educational applications
   a. Computer-assisted instruction
   b. Simulations
   c. Administrative uses
3. Word processing
4. Data base management
5. Spreadsheets
6. Business applications
   a. Payroll
   b. Accounting
   c. Inventory
   d. Management
7. Personal use
8. Telecommunications
9. Graphics
10. Other

ACTIVITIES

1. View an audiovisual presentation showing computer applications.
2. Observe vendor demonstrations of computers.
3. Observe teacher demonstrations of various software packages.
4. Give students various software packages to preview and demonstrate to the class.
5. Listen to a representative from the telephone company speak on telecommunications.
6. Collect and organize newspaper and magazine articles, ads, and pictures of software applications.

OBJECTIVE III-C

3. To demonstrate an ability to use a computer operating system, the student will state the steps to:

   a. boot the computer system
   b. initialize (format) a disk
   c. obtain a directory (catalog)
   d. copy a file or an entire diskette
   e. delete a file
   f. execute a program

GENERALIZATION

The program that must be loaded into a computer before the computer can function is the operating system.

COURSE CONTENT OUTLINE	ACTIVITIES
C. Operating Systems 1. Booting the computer 2. Initializing (formatting) a disk 3. Obtaining a directory (catalog) of a disk 4. Copying a disk or file 5. Deleting a file 6. Executing a program	1. Arrange in sequential order a list of steps for booting the system. 2. Boot the computer system available. 3. Explain the procedure for initializing a disk. 4. Initialize a disk.

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COURSE CONTENT OUTLINE CONTINUED

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ACTIVITIES CONTINUED

5. State the steps needed to:

   a. obtain a directory
   b. copy a disk or file
   c. delete a file
   d. execute a program

6. Demonstrate on a computer the various commands of an operating system.

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BEST COPY AVAILABLE

Section III

VOCABULARY

arithmetic-logic unit (ALU)

bar code

bit

boot

bubble memory

buffer

byte

cathode ray tube (CRT)

central processing unit (CPU)

control unit

cursor

disk (diskette)

disk density

disk operating system (DOS)

floppy disk

format

graphic tablet

hard copy

hard disk

hardware

initialize

input

interface card

joystick

K

light pen

magnetic tape

memory

menu

modem

mouse

off line

on line

operating system

output

paper tape

peripheral

plotter

printer

RAM

random access

ROM

sequential access

software

touch screen

time-sharing

universal product code (UPC)

voice synthesizer

word processing

OBJECTIVE IV-A

1. To demonstrate an understanding of the different kinds of programming languages, the student will:

   a. explain the difference between lower level programming languages and higher level programming languages
   b. distinguish among the different programming languages according to their uses

GENERALIZATION

Programming languages have developed from machine language to higher level languages that are less technical and easier for humans to use.

COURSE CONTENT OUTLINE

IV. Elementary Programming

   A. Language awareness

      1. Lower level languages

         a. Machine language
         b. Assembly language

      2. Higher level languages

         a. FORTRAN
         b. COBOL
         c. BASIC
         d. Pascal
         e. LOGO
         f. Other

ACTIVITIES

1. Change a decimal number to a binary number; change a binary number to a decimal number.

2. Code a simple message using a coding system that replaces the letters a through z with the numbers 1 through 26.

3. Change the English word "cat" into ASCII code and binary code.

Example: cat ASCII: 67 65 84
Binary: 1000011 1000001 1010100

4. Ask family and friends what programming language is used at work.

(continued on next page)

5. List various higher level programming languages and the fields in which they are used.

6. Write an output statement in BASIC, Pascal, COBOL, and/or FORTRAN.

   Example:

BASIC	PRINT "HELLO"
Pascal	WRITE('HELLO')
FORTRAN	WRITE(6H HELLO)
COBOL	DISPLAY 'HELLO'

7. Duplicate examples of programs in different languages. Have students determine the purpose of the program.

OBJECTIVE IV-B

2. To demonstrate facility with a computer keyboard, the student will use the alphabetic, numeric, and special function keys.

GENERALIZATION

The keyboard for each computer has its own special function keys.

COURSE CONTENT OUTLINE CONTINUED

B. Introduction to the keyboard

1. Alphabetic keys
2. Numeric keys
3. Special function keys
4. Other

ACTIVITIES CONTINUED

1. Locate special function and character keys on a diagram of the computer keyboard.

2. Compare the keyboards of different brands of computers from diagrams of each brand.

3. Enter sample programs involving:
   a. alphabetic keys
   b. numeric keys
   c. symbol keys
   d. function keys
   e. SHIFT
   f. space bar
   g. RETURN or ENTER key

4. Using a diagram of the computer keyboard, drill students daily on the different key positions.

5. Use typing tutorial software to learn keyboard positions.

6. Have keyboard competition using typing tutorials.

7. Time the entry of keyboard drills.

OBJECTIVE IV-C

3. To demonstrate an understanding of BASIC programming, the student will:

   a. use PRINT as a direct command
   b. enter, execute, run, list, and erase a given program from tape or disk into the memory of the computer
   c. save a program on tape or disk and load a program from tape or disk into the memory of the computer
   d. explain the elements of a BASIC program line: line number, keyword, variable, expression, or literal
   e. write simple programs using all of the following key words: REM, INPUT, LET, PRINT, GOTO, and END
   f. identify and define the following relational symbols: =, <, <=, >, >=, and <>
   g. write programs using branching with IF-THEN and GOTO statements
   h. write programs using looping with FOR-NEXT statements
   i. evaluate a LET statement using all the BASIC operators +, -, *, /, exponentiation, and the hierarchy of operations' procedures
   j. modify a program by deleting a line, adding a line, or changing a line
   k. analyze a given problem

      (1) write the solution steps
      (2) convert to BASIC program statements
      (3) document the program
      (4) execute the program
      (5) debug the program by correcting logic and syntax errors

   l. analyze a given program and determine the value of each variable to be printed

GENERALIZATION

Programming a computer means giving it detailed instructions in a strict logical sequence.

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OBJECTIVE IV-C CONTINUED

COURSE CONTENT OUTLINE

C. BASIC programming
  1. Direct commands
    a. PRINT
    b. RUN
    c. LIST
    d. Clear the screen
    e. Erase memory
    f. Load a program
    g. Save a program
  2. Program statements
    a. Line numbers
    b. Variables
      (1) numeric
      (2) string
    c. Keywords
      (1) PRINT
      (2) LET
      (3) INPUT
      (4) GOTO
      (5) END
      (6) REM
      (7) IF-THEN
      (8) FOR-NEXT
      (9) Other
  3. Arithmetic operations
    a. Symbols
    b. Order of operations
  4. Editing
    a. Deleting a line
    b. Adding a line
    c. Modifying a line
  5. Debugging
    a. Syntax errors
    b. Logic errors
  6. Graphics (optional)

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ACTIVITIES

1. Find the sum and difference of two numbers by using the PRINT command.

2. Display a phrase or a string of characters by using the expression in quotes in a PRINT command.

3. Use a special feature of the computer by using a character string in the PRINT statement.

   Example: Apple computer--ring the bell:
   PRINT CHR$(7)
   TRS-80--display elongated characters:
   PRINT CHR$(27)CHR$(14)

4. Load a program from a prepared disk or tape into the computer memory and verify that the program is in memory by listing and executing the program.

5. Type in a sample program and save the program on tape or disk. Verify that the program is saved on disk or tape by erasing the program from memory, reloading the program, and listing it.

6. Load a program from a disk or tape, save it under a new name, and delete the program under the old name.

7. Identify the line number, keyword, and variable in a program line.

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ACTIVITIES CONTINUED

8. Load a program and then add a line that should be inserted between two lines in the original program. List the program to confirm the sequential order of the statements.

9. Add a program line to an existing five line program numbered one through five by renumbering the program lines and inserting the new line.

10. Choose the BASIC variable names from a list of items.

11. Indicate whether each item in a list is a string variable, a numeric variable, or not a variable.

12. Assign values to string and numeric variables using the LET statements.

13. Predict the output from a PRINT statement that includes numeric variables, string variables, and strings.

14. Change a program by replacing two or more LET statements with a single INPUT statement.

15. Design an interactive program using INPUT and PRINT statements.

16. Redesign the program in Activity 15 to be "user-friendly."

17. Write a simple looping program using a GOTO statement.

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ACTIVITIES CONTINUED

18. Document a program using REM statements.

19. Write a program using all the following key words: REM, INPUT, LET, PRINT, GOTO, and END.

20. Classify as true or false mathematical statements involving the relational operators. (e.g., 4 < 5, 6 > 8)

21. Rewrite English statements using BASIC relational symbols (e.g., "A is less than B" becomes A < B.).

22. Fill in the relational symbol between two numbers (e.g., 8 ? 10 should be 8 < 10).

23. Write the steps that another student can follow in preparing a peanut butter and jelly sandwich.

24. Translate a set of problem solution steps to the corresponding BASIC program statements. Include at least one IF-THEN statement.

25. Indicate which statement will be executed immediately after the IF-THEN statement when the evaluation of the statement is true and when it is false.

26. Write a program that will print the larger of any set of two numbers entered with the INPUT statement.

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27. Identify the components of a FOR-NEXT loop.

28. Change a looping program by replacing a GOTO statement with FOR-NEXT statements.

29. Predict the output of programs that use various computer statements.

30. Evaluate an expression which includes a combination of two or more arithmetical operations.

31. Construct a LET statement to evaluate an equation that includes an arithmetical expression with multiplication, division, and exponentiation.

32. Demonstrate the order of operations using a calculator and a basic PRINT statement on the computer.

33. Determine the value of a BASIC variable after a sequence of program statements has been executed.

34. Delete a line from a given program.

35. Add a line to a given program.

36. Change a program line that contains a LET statement to a program line that contains an INPUT statement.

37. Write a program to produce a desired output.

38. Generate a Random set of numbers using the RND function.

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Section IV

VOCABULARY

arithmetic operator

ASCII

assembly language

BASIC

binary

branching

bug

character

COBOL

debug

documentation

END

exponent

expression

FOR-NEXT

FORTRAN

function keys

GOTO

graphics

IF-THEN

INPUT

keyword (reserved word)

LET

line number

logic error

LOGO

loop

machine language

numeric variable

order (hierarchy) of operation

Pascal

PRINT

REM

relational symbols

string

syntax error

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OBJECTIVE V-A

1. To demonstrate an ability to assess the need for a computer, students will list three tasks that they would want a computer to do:

   a. for them personally
   b. for a business

GENERALIZATION

Before purchasing a computer, a person should decide the purpose for which the computer will be used.

COURSE CONTENT OUTLINE

V. Hardware and Software Selection

   A. Needs assessment

      1. Personal use
      2. Business use

ACTIVITIES

1. Given a list of computer uses, classify each use as a personal use, a business use, or both.

OBJECTIVE V-B

2. To demonstrate an understanding of software requirements, the student will select a software package to perform a particular task.

GENERALIZATION

Before purchasing computer hardware, a person should decide the type of software to be run by the hardware.

COURSE CONTENT OUTLINE

B. Software requirements

ACTIVITIES

1. Given a popular software package, explain its purpose and possible uses.

2. List sources for software.

3. Examining a software product, rate the following:

   a. readability of screen format
   b. number of keystrokes for control functions
   c. readability of report formats

4. For a particular software package, state the requirements for:

   a. interface cards
   b. monitor size
   c. printer type and size
   d. operating system
   e. main memory
   f. secondary memory
   g. other peripherals

OBJECTIVE V-C

3. To demonstrate an understanding of hardware requirements, the student will select a hardware configuration to run a particular software package.

GENERALIZATION

Numerous factors must be taken into consideration when purchasing computer hardware.

COURSE CONTENT OUTLINE

C. Hardware requirements

1. Amount of memory
2. Peripherals

ACTIVITIES

1. List sources for hardware.
2. Collect pictures of different CRT monitors.
3. Collect pictures of different keyboards.
4. Bring to class a sample of one of the following types of printing: data quality, correspondence quality, letter quality.
5. Given a particular peripheral device, find the best total price for it.
6. Examine catalogs for memory requirements of software offerings.

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OBJECTIVE V-D

4. To demonstrate an understanding of the cost of computer software and hardware, the student will calculate the total cost of the software and hardware selected for objectives 2 and 3.

GENERALIZATION

Once the software and hardware requirements for a computer system are determined, the total cost can be calculated.

COURSE CONTENT OUTLINE

D. Cost

ACTIVITIES

1. Collect prices of computer systems from advertisements.

2. Given a specific budget compile a list of computer hardware needed for home use. The total amount expended for the items must not exceed the amount budgeted.

OBJECTIVE V-E

5. To demonstrate an awareness of maintenance requirements, the student will list three maintenance measures for a computer system.

GENERALIZATION

In determining the amount of money to be spent on a computer system, the maintenance cost must be included.

COURSE CONTENT OUTLINE

E. Maintenance requirements

ACTIVITIES

1. Observe at least one of the following maintenance activities.

   a. vacuum the keyboard
   b. vacuum the inside of the printer
   c. change the printer ribbon
   d. clean the tape drive heads
   e. clean the disk drive heads
   f. change the daisy wheel printing head
   g. clean the video screen
   h. use a diagnostic software package

2. List five do's and five don't's for the care and handling of diskettes.

3. Draw cartoons to illustrate the do's and don't's for handling diskettes.

Section V

VOCABULARY

color monitor

configuration

correspondence quality printing

daisy wheel printer

data quality printing

diagnostics

dot matrix printer

graphics printing

jet ink printer

letter quality printer

monochrome monitor

thermal printer

vendor

OBJECTIVE VI-A

1. To demonstrate an awareness of the implications of computers for future lifestyles, the student will list and discuss four ways that computers will affect their future lifestyles.

GENERALIZATION

Computers will increasingly affect all citizens in many aspects of their lives.

COURSE CONTENT OUTLINE

VI. The Computer's Impact on Society Tomorrow

A. Implications for future lifestyles

1. Home
2. Work
3. Recreation
4. Education
5. Health

ACTIVITIES

1. Collect magazine or newspaper articles reflecting trends in lifestyles caused by computers. From the articles collected, make one list of the ways computers influence lifestyles. Using the areas of home, work, recreation, education, and health, classify the social impact of the computer on each.

2. Discuss the effects of computers on employment.

OBJECTIVE VI-B

2. To demonstrate an awareness of technological trends, the student will present two examples of technological trends in industry involving computers.

GENERALIZATION

Technological trends will enhance human life, but will also cause problems.

COURSE CONTENT OUTLINE

B. Technological trends

1. Robotics
2. Computer-aided design and manufacturing
3. Communications
4. Artificial intelligence
5. Biotechnology
6. Other

ACTIVITIES

1. View an audiovisual presentation depicting the use of computers in industrial settings.

2. Discuss the following:

   a. reasons robots are used in industry
   b. conditions under which robots can perform
   c. tasks robots can perform
   d. future occupations which will grow out of robotics

3. List products that could be designed more efficiently using computers.

4. Visit the office of an architect or have someone come to class to discuss CAD Systems. (Computer Aided Drafting)

5. Demonstrate the operations of a robot.

OBJECTIVE VI-C

3. To demonstrate an awareness of careers and employment opportunities in the computer field, the student will list:

   a. at least three occupations that involve hands-on applications using the computer
   b. two occupations that involve the gathering of information to be put into a computer and two occupations that come about after information has been entered

GENERALIZATION

A growing number of careers involve computers either directly or indirectly.

COURSE CONTENT OUTLINE

C. Careers and employment

   1. Careers directly involving computers
   2. Careers indirectly involving computers

ACTIVITIES

1. Bring to class the classified ads section of a newspaper. Read to the class some of the job descriptions involving computers. Note the salaries offered and education and experience required.

2. Given a list of jobs (e.g., repairing a printer, advising a business on what computer to buy, writing a program, etc.), state the job title of the person who would do each job (e.g., computer technician, systems analyst, programmer, and so forth).

3. Invite resource people to class to discuss computer use in their employment.

4. Spend a class period in counselor's office working with guidance information system (GIS).

OBJECTIVE VI-D

4. To demonstrate an awareness of ethical and legal problems caused by computers, the student will:

   a. explain the difference between public domain software and copyrighted software
   b. list three ways that computers threaten individual privacy
   c. explain the two ways that human errors cause computer errors
   d. list two ways that computer files can be physically secured
   e. list two problems or concerns involved in regulating access to data banks

GENERALIZATION

Computers present numerous ethical and legal problems that must be solved by individuals and by society.

COURSE CONTENT OUTLINE

D. Ethics and security

   1. Software piracy
   2. Threat to personal privacy
   3. Computer vs. human errors
   4. Regulating access to government and business files

ACTIVITIES

1. List at least two sources of public domain software.

2. List reasons for copyright laws and explain how these laws affect computer software.

3. Bring to class some mail which has been generated by a computer or which came with a mailing label produced by a computer.

4. Post on the bulletin board articles discussing errors blamed on computers.

5. Write a letter to the U.S. House of Representatives Committee on Government Operations. Ask for a copy of any report discussing ways the Federal Government uses computers.

(continued on next page)

6. Discuss four ways to secure computer files (e.g., passwords, unplug communication lines, lock the computer room, take disk out of machine, require computer to call back the person trying to use the system, and so forth). Give an advantage of each method.

7. Compose an eight-character password. A week after collecting these, the teacher asks each student to recall his/her own password.

8. List reasons for and against a cashless and checkless society.

9. Using specified rates for a database service (e.g., Compu-Serve), calculate the cost of connecting to the service for a certain number of minutes at a certain time of day.

10. List ways a person could use a database service like Compu-Serve or the Source.

11. State the meaning of the acronym "GIGO" (garbage in, garbage out) and explain why this term is applied to computers.

Section VI

VOCABULARY

android

artificial intelligence

automation

biotechnology

computer-assisted design (CAD)

computer-assisted engineering (CAE)

computer-assisted manufacturing (CAM)

computer operator

computer salesperson

computer security

data bank

data entry clerk

digital synthesis

electrical engineer

electronic mail

industrial robot

industrial technology

password

programmer

robot

robotics

systems analyst

technician

telecommunications

teleconferencing

INDIVIDUAL STUDENT PROJECTS

Section I

1. Interact with a computer-assisted instruction software package. List its good and bad points.

Section II

2. Give an oral or written report on a significant person or invention that has made an impact on the development of computers.

3. Write a research paper on the history of Silicon Valley.

Section III

4. Use a word processing program to write a letter or short report.

5. Use a database management program to create and maintain a file.

6. Use a spreadsheet program to accumulate data and make projections.

7. (a) Locate and read one issue of a magazine from your year of birth. List any computer-related information found.
   (b) Locate and read one issue of the same magazine for the current year. List any computer-related information found.
   (c) Summarize the articles read.

Section IV

8. Write a BASIC program that uses all the following statements: INPUT, LET, IF-THEN, FOR-NEXT, PRINT, and END. Document the program using REM statements, correct all errors in syntax and logic, and make a hardcopy of the program listing and output.

9. Write a program to display your initials on the monitor. Use any graphics commands available for your computer.

Section V

10. Given a particular software package for a particular hardware configuration, find the best total price for the entire system.

11. Select a software package and a hardware configuration to perform one of these tasks:

    a. write articles as a free-lance writer
    b. manage stocks and bonds using data obtained from a national database
    c. pay bills and make funds transfers interactively with the bank
    d. as a product manufacturer, control your inventory
    e. balance your home checkbook and keep track of your cooking recipes
    f. catalog your record collection
    g. collect free public domain software from national databases

Section VI

12. From a library search, list career and job titles involving computers.

13. Using a computer, monitor, and modem, demonstrate to the class an on-line database service (e.g., The Source or Compu-Serve).

14. Keep a scrapbook of pictures and articles related to computers.

15. Organize a computer club at your school or in your neighborhood.

COMPUTER LITERACY BIBLIOGRAPHY

Books

Atkinson, June St. Clair. Help with Computer Literacy. Boston: Houghton Mifflin, 1984.

Brenan, Kathleen and Steven Mandell. Introduction to Computers and BASIC Programming. St. Paul, Minnesota: West Publishing Company, 1984.

Cummins, Jerry and Gene Kuechmann. Programming in BASIC. Columbus, Ohio: Charles E. Merrill, 1983.

French, Francis, et al. Beginning Computer Programming: BASIC. Boston: Allyn and Bacon, 1984.

Gifted Child Project. Problem Solving with Computers. Tallahassee, Florida: Leon County Public Schools, 1978.

Golden, Neal. Computer Literacy with an Introduction to BASIC Programming. Orlando, Florida: Harcourt, Brace, Jovanovich; 1985.

Graham, Neill. The Mind Tool--Computers and Their Impact on Society. New York: West Publishing Co., 1983.

Heller, Rachelle S., and C. Dianne Martin. Bits and Bytes about Computing: A Computer Literacy Primer. New York: Macmillan, 1982.

Hopper, Commodore, Grace Murray, and Steven L. Mandell. Understanding Computers. St. Paul, Minnesota: West Publishing Co., 1984.

Horn, Carin E. and James L. Poirot. Computer Literacy: Problem Solving with Computers. Austin, Texas: Sterling Swift, 1981.

Jacobs, Zeney P., et al. Computer Programming in the BASIC Language. Boston: Allyn and Bacon, 1978.

Jones, Aubrey, Jr. I Speak BASIC to My Apple (editions also for Commondore 64, TRS-80, and others). Hayden, New York.

Long, Larry. Introduction to Computers and Information Processing. Englewood Cliffs, New Jersey: Prentice-Hall, 1984.

Luehrmann, Arthur and Herbert Packham. Computer Literacy, a Hands-on Approach (Apple II and TRS-80 editions). New York: McGraw Hill, 1983.

Mandell, Stephen L. Computers and Data Processing Concepts and Applications. New York: West Publishing Co., 1982.

Presley, Bruce. A Guide to Programming in Applesoft. New York: Litton Educational Publishing Co.

Richman, Ellen. Spotlight on Computer Literacy. New York: Random House, 1982.

Scott Foresman Computer Literacy Courseware Series. Glenview, Illinois: Scott Foresman, 1984.

Shelly, Gary B. and Thomas J. Cashman. Introduction to Computers and Data Processing. Anaheim Publishing Company, 1980.

Spencer, Donald. An Introduction to Computers--Developing Computer Literacy. Columbus, Ohio: Charles E. Merrill, 1983.

Tri-County Computer Consortium. CLAS--Computer Literacy and Awareness for Students: Elementary Resource Guide for Computer Literacy. Macomb, Michigan: Tri-County Computer Consortium, 1983.

Tri-County Goal Development Projects. Course Goals in Computer Education. Portland, Oregon: Tri-County Goal Development Projects, 1979.

Wood, Merle. Computer Awareness. Cincinnati, Ohio: Southwestern Publishing Company, 1982.

Other Resources

Encyclopedia Brittanica sound filmstrips: "Understanding Computers" (5 filmstrips).

Minnesota Educational Computing Consortium (MECC) 3490 Lexington Avenue North, St. Paul MN 55112: "101 Activities for Computer Classes" (activitiy book), "The Three R's of Microcomputing (The Glass Computer)." IBM 128K 1 disk.

Instructional TV: "Computer Literacy" (23 programs), "Adventure of the Mind" (6 programs), refer to latest ITV Teacher's handbook.

Classroom Computer News
341 Mount Auburn Street
Watertown, MA 02171

Creative Computing
P. O. Box 789-M
Morristown, NJ 07960

Popular Computing
70 Main Street
Peterborough, NH 03458

Personal Computing
P. O. Box 1408
Riverton, NJ 08077

The Computing Teacher
Department of Computer and Information Science
University of Oregon
Eugene, OR 97403

Electronic Learning
Scholastic, Inc.
902 Sylvan Avenue
P. O. Box 2001
Englewood Cliffs, NJ 07632

Evaluative Techniques

Regular and frequent evaluation is recommended. The following methods of evaluation are suggested:

1. teacher-made unit tests
2. periodic short quizzes
3. oral presentations
4. written reports
5. class participation
6. out-of-class assignments
7. individual projects emphasizing design and creativity
8. hand written programs

and if a sufficient number of computers are available,

9. screen displays of program listings and program results
10. printouts of program listings and results
11. skills checklist (proficiency in operating computers, disk drives, and printers)

These evaluative techniques are to be used to measure the degree of achievement by each student with the understanding that there are many other tools for the measurement of student progress in achieving curricular objectives.

Sample Test Items

Section I

1. List three kinds of jobs that computers can do better than people.
2. List three kinds of jobs that people can do better than computers.

True or False:

3. Police sometimes use computers to help identify stolen cars.
4. Most nurses give injections by computer.
5. Computers <u>cannot</u> be used to assist in teaching English grammar.
6. The increased use of computers in our society both eliminates and creates jobs.

Choose the best answers:

7. Computers are not good for tasks that require:
   (a) speed
   (b) accuracy
   (c) intuition
   (d) something to be done over and over again.

8. If your charge account bill has an error, it was probably caused by:
   a) breakdown of the computer
   b) mistakes made by people
   c) poor design of the computer
   d) general weaknesses of machines

9. A basic use of computers in libraries involves:
   a) information storage and retrieval
   b) simulation and modelling
   c) process control
   d) computation

10. Many people disagree about using large computer files in:
    a) government planning
    b) research
    c) checking on people
    d) carrying out social programs

Section II

1. Which scientific discovery made microcomputers possible?
   a) vacuum tubes
   b) integrated circuits
   c) floppy disks
   d) magnetic tape

2. How large were the first electronic computers?
   a) They weighed about 50 pounds.
   b) They weighed about 200 pounds.
   c) They could be easily moved from place to place.
   d) They filled one or more rooms.

3. Which was the first device that used punched cards to control its operation?
   a) The analytical engine
   b) ENIAC
   c) Jacquard's loom
   d) Hollerith's tablulating machine

4. List the principal component of each of the first three generations of electronic computers

5. Specify whether each of the following refers to a (A) mainframe, (P) minicomputer, or (C) microcomputer.
   a) about the size of an office desk
   b) sits on a desk
   c) the center of a time-sharing system
   d) a personal computer

Section III

1. List the four functions of any computer.

2. Which of the following is not a function of most data-base management programs:
   a) The ability to create a new file
   b) The ability to add, delete, or change records within a file
   c) The ability to word process documents
   d) The ability to sort, file, and record

3. Spreadsheet programs can be used to create:
   a) business letters with extra wide horizontal margins
   b) files that can keep track of government information about students
   c) a personal budget
   d) a mailing list that can be sorted alphabetically

Classify each statement as applying to RAM or ROM:

4. Its contents are lost when computer is turned off.
5. User may not store information in it.
6. Its contents cannot be changed by the user.
7. Give one advantage and one disadvantage of a hand disk and a floppy disk.

Section IV

1. When this program is run, what is the output?

```
10 LET A = 36
20 LET B = 60
30 LET C = (A+B)/3
40 PRINT C
50 END
```

2. Which one of the following BASIC statements contains an error in syntax?
   A. 10 LET X = C * D
   B. 20 IF A > 7 THEN 50
   C. 30 INPUT A;B
   D. 40 PRINT "ANSWER IS"; Y

3. Write a program that accepts two numbers entered from the keyboard and prints the sum of the two numbers. Print the output like this: SUM = 13

4. List the command for your computer that does the following:

   A. Execute the program in memory.
   B. Clear the screen.
   C. Load a program named TEST from a diskette into memory.
   D. Erase the program in memory.
   E. Display the statements of the program in memory.
   F. Convert to graphics mode.

Section V

1. List three tasks for which one would need a computer in business.
2. Describe some factors that should be considered before purchasing software for a computer.
3. The input mechanism found on most terminals is:
   a) a monitor
   b) a printer
   c) a keyboard
   d) a light pen

4. Given $2000, compile a list of computer hardware and software needed for a home computer system to be used primarily for word processing.
5. List three do's and three don't's for the care and handling of diskettes.

Section VI

6. Discuss at least two advantages and at least two disadvantages of electronic funds transfer (EFT).
7. A computer learns by:
   a) continuously comparing numbers
   b) storing occurrences of the past in data base
   c) simulating human sensory capabilities
   d) all of the above

True or False

8. The majority of entry level programming positions are for applications programming.

Section VII

9. Present an argument for and an argument against the establishment of a national data base.

10. List two jobs that computers are eliminating and two jobs computers are creating.

SOFTWARE

The following information on software is provided by members of the writing committee and is in no way intended to be a comprehensive listing of software available in these areas.

WORD PROCESSING

Bank Street Writer
(Apple, Commodore 64, IBM, Tandy)
Broderbund Software
17 Park Drive
San Rafael, CA 94903

Apple Writer II
(Apple)
Apple Computer, Inc.
2950 N. Loop West, Suite 1070
Houston, TX 77092

pfs: Write
(Apple, IBM, Tandy)
Software Publishing Corp.
1901 Lendings Drive
Mountain View, CA 94043

Word Juggler
(Apple)
Quirk, Inc.
2525 West Evans, Suite 220
Denver, CO 80219

Scripsit
(TRS-80)
Tandy Corp.
Fort Worth, TX 76102

Milleken Word Processor
(Apple)
Milleken Publishing Co.
P. O. Box 21579
St. Louis, MO 63132

DATA BASE

pfs: File and pfs: Report
(Apple, IBM, TRS-80, Tandy)
Software Publishing Corp.
1901 Landings Drive
Mountain View, CA 94043

Friday
(Apple, IBM)
Ashton-Tate
9929 West Jefferson Blvd.
Culver City, CA 90230

D B Master
(Apple)
Stoneware, Inc.
50 Belvedere Street
San Rafael, CA 94901

Friendly Filer
Grolier Electronic Publishing Inc.
Dept. 336
Sherman Turnpike
Danbury, Conn 06816

SPREADSHEET

Super Calc 3
(Apple, IBM, Tandy)
Prentice-Hall
Englewood Cliffs, NJ 07632

Visi Calc
(Apple, Commodore, IBM, TRS-80)
Software Arts
27 Mica Lane
Wellesley, MA 02181

Planner Calc
(IBM, Tandy)
IBM
P. O. Box 1328-W
Boca Raton, FL 33432

Multiplan
(Apple, IBM, Commodore 64, TRS, Tandy)
Microcraft
10700 Northup Way
Bellevue, WA 98009

INTEGRATED SYSTEMS

Apple Works (word processing data base spreadsheet)
(Apple)
Apple Computer, Inc.
2950 N. Loop West, Suite 1070
Houston, TX 77092

LOTUS 1-2-3
(IBM, Tandy)
Ashton-Tate
9929 W. Jefferson Blvd.
Culver City, CA 90230

Deskmate
Tandy
(Wp, DB, SS, Telecommunication, Messenger, Scheduler, Calendar, Mailer)
Tandy Corp.
Ft. Worth, TX 76102

GENERAL

Print Shop
(Apple, Commodore, IBM, Tandy)
Broderbund Software
17 Paul Drive
San Rafael, CA 94903

Typing Tutor III
(Apple, IBM, TRS-80)
Aquarius Publications, Inc.
P. O. Box 128
Indian Rocks Beach, FL 33535

Crossword Magic
(Apple)
Computerware
1589 Fraser Drive
Sunnyvale, CA 94087

The Newsroom
(Apple, Commodore, IBM, Tandy)
Springboard Software, Inc.
7807 Creekridge Circle
Minneapolis, MN 55435

pfs: series (available, with learning materials and data disks)
Scholastic, Inc.
P. O. Box 7502
Jefferson City, MO 65102

Incredible Muscial Keyboard
(Commodore 64)
Sight & Sound Music Software Inc.
3200 S. 166th, P. O. Box 27
New Berlin, WI 53151

Programs of each major type above are also available through MECC.
Contact MIS at Louisiana Department of Education, P. O. Box 94064, Baton Rouge, Louisiana 70804-9064.

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